

CIVIL AERONAUTICS BOARD

ACCIDENT INVESTIGATION REPORT

Adopted: August 26, 1955

Released: August 31, 1955

NORTHEAST AIRLINES, INC., LEBANON, NEW HAMPSHIRE, MAY 31, 1955

The Accident

A Northeast Airlines Douglas DC-3, N 19942, Flight No. 568, overshot the end of runway 18 and struck a ditch during a landing at Lebanon Airport, Lebanon, New Hampshire, May 31, 1955, at 1826.^{1/} There was no injury to the passengers or crew. The aircraft was substantially damaged.

History of the Flight

The flight originated at La Guardia Airport, New York, for Lebanon with a stop scheduled at Keene, New Hampshire. The aircraft departed La Guardia on a VFR (Visual Flight Rules) flight plan at 1612 with a crew consisting of Captain Parker F. Schofield, First Officer C. Peter Blouin, and Stewardess Sybil Walker; twelve passengers were aboard.

The flight proceeded to the vicinity of Greenfield, Massachusetts, where, observing a thunderstorm ahead, the crew requested and received an IFR (Instrument Flight Rules) clearance to Keene. Near Keene, Flight 568 was cleared to the Lebanon radio beacon via Blue Airway 45, to maintain 6,000 feet; this was later revised to descend and maintain 5,000 feet. Keene was overflown because of thunderstorms and poor radio reception. After finding a 5,000-foot ceiling at Lebanon and canceling its IFR clearance, the flight proceeded VFR for landing at Lebanon. Northeast Operations had relayed to Flight 568 the following 1807 Lebanon special weather observation: "Sky partially obscured; 800 scattered, estimated ceiling 3,000, overcast; visibility 2; light rainshowers and fog; wind calm; altimeter 29.86. Remarks: Visibility to north 1; scattered clouds variable to broken."

Captain Schofield circled the airport to the left in the descent and approach to runway 18. On the base leg the landing gear was extended and the wing flaps were placed in the full-down position. The gear and flaps remained in these positions throughout the approach and landing roll. The airspeed crossing the airport boundary was reported as 90 knots and touchdown on the wet runway as 900 feet from the approach end. Steady application of the brakes followed by intermittent "pumping" failed to stop the landing roll. The aircraft rolled off the end of the runway, struck a drainage ditch, and came to rest on the underside of its fuselage 57 feet from the end of the runway. After checking for fire the crew allowed the passengers to remain in the aircraft because of the rain until cars arrived. There were no injuries.

^{1/} All times herein are eastern standard and are based on the 24-hour clock.

The 1828 (2 minutes after the accident) Lebanon weather report was: Sky partially obscured, 800 scattered, estimated 3,000, overcast; visibility 2; light rainshowers and fog; temperature 59; dewpoint 58; wind calm; altimeter 29.86. Remarks: Scattered clouds variable to broken.

Investigation

The Lebanon Airport is 579 feet above sea level. There are two runways (4,000 feet x 150 feet and 3,500 feet x 150 feet). Runway 18-36 is 4,000 feet long and the south end is approximately 14 feet higher than the north. A downward slope occurs in the first 1,700 feet and the runway then slopes upward to the south. The runway is surfaced with coarse bituminous material and there are numerous small depressions where rain collects. An airport rule requires that landings be made to the south when the wind is calm. A drainage ditch about 6 feet deep and 30 feet wide runs at right angles 11 feet south of the runway end. There is no traffic control on the airport.

Examination of tire marks on runway 18 indicated that touchdown was 900 feet from the approach end on the main gear with the tail wheel off the runway surface. Alignment with the runway was maintained to the runway end. The captain stated the aircraft was in a three-point position as it left the runway. The landing gear wheel struck the far side of the drainage ditch 3 feet below its top.

Captain Schofield said he did not consider a go-around because of rising terrain and low clouds south of the airport. He unlocked the tail wheel to groundloop but changed his mind because of the aircraft's speed and the hazard involved. Power was applied before leaving the runway in the hope of clearing the drainage ditch; ignition switches were cut as the aircraft left the runway.

Examination of the aircraft after the accident disclosed that the tail wheel was unlocked, wing flaps were fully extended, and all control surfaces were movable. Left and right landing gear struts were forced rearward. The tires were inflated and had no visible scuff marks. Both engines and their nacelles drooped downward. All propeller blades, except one on the left engine, were bent rearward or damaged by ground contact. Examination of the crew compartment disclosed no irregularities of controls or instruments. Further examination disclosed no indications of failure or malfunctioning prior to the accident. This was substantiated by statements of the crew.

Witnesses at the airport stated that the approach appeared to be slightly high and fast.

The crew stated that after they left the aircraft they observed indications on the trees of an overriding tail wind. The INSAC (Interstate Airways Communications) station is in the northwest quadrant of the field and the anemometer is located nearby at a height of 35 feet above the ground. After the accident the anemometer was found to be functioning normally. The observation made by the INSAC station immediately after the accident indicated a continuing calm condition. The runway surface was wet at the time.

Gross weight of the aircraft on landing at Lebanon was 21,998 pounds, 3,348 pounds under that allowable. This load was properly distributed with respect to the center of gravity of the aircraft.

Analysis

An approach airspeed of 90 knots over the boundary and a touchdown 900 feet past the threshold of a dry 4000-foot runway would normally be safe. However, a landing made at this speed on a wet runway is a marginal operation. The circumstances left very little time for corrective action by the captain when he found braking action ineffective.

Keeping the tail up on the DC-3 in order to maintain good directional control and to put more weight on the main gear for better braking is a practice often used in landing. Since the captain stated that the tail wheel was not in contact with the runway until near its end, the speed at touchdown must have been somewhat excessive in order to permit keeping the tail in the air for approximately 3,000 feet. That there was still considerable speed when the aircraft ran off the runway is indicated by the fact that the landing gear struck only the top half of the far bank of the 30-foot wide ditch. The captain stated that he did not attempt to groundloop because of the speed.

The crew reported observing indication of an overriding wind after the accident. Analysis indicates that a very light northwest breeze existed above the surface, increasing slowly to 6 to 8 knots at 400 feet above the field. Under the conditions that existed at the time, it is extremely unlikely that a strong wind could have existed within 500 feet of the surface and the surface wind remain calm.

Wet runways affect braking action adversely. The captain's statement reports his braking effectiveness as "poor to nil" and when this condition was definitely established there was not sufficient time or distance remaining to stop the aircraft.

High speed and resulting momentum in the landing roll would retard dissipation of the wing lift, adversely affecting braking action and increasing the distance required for stopping.

Findings

On the basis of all available evidence the Board finds that:

1. The flight crew, the aircraft, and the air carrier were currently certificated.
2. The gross weight of the aircraft at the time of the landing was more than 3,000 pounds under the allowable weight.
3. It was raining and the wet runway caused poor braking.
4. The approach was high and fast and the flight did not use all the available runway.

5. There was no mechanical failure or malfunction in the aircraft or its components, including the braking system, prior to the accident.

Probable Cause

The Board determines that the probable cause of this accident was an approach too high and too fast under the existing calm wind and wet runway condition and the subsequent ineffective braking action.

BY THE CIVIL AERONAUTICS BOARD:

/s/ ROSS RIZLEY

/s/ JOSEPH P. ADAMS

/s/ JOSH LEE

/s/ CHAN GURNEY

/s/ HARMAR D. DENNY

S U P P L E M E N T A L D A T A

Investigation

The Civil Aeronautics Board was notified of the accident in the evening of May 31, 1955. An investigation was immediately initiated in accordance with the provisions of Section 702 (a) (2) of the Civil Aeronautics Act of 1938, as amended.

Air Carrier

Northeast Airlines, Inc., is a Massachusetts corporation with its principal offices at Boston, Massachusetts. The company is engaged in the transportation by air of persons, property, and mail under a currently effective certificate of public convenience and necessity issued by the Civil Aeronautics Board and an air carrier operating certificate issued by the Civil Aeronautics Administration. The company conducts scheduled operations over the route described in this report, and others.

Flight Personnel

Captain Parker F. Schofield, age 38, has been employed as a pilot by Northeast Airlines, Inc., since July 18, 1941. He holds a current airman certificate with an airline transport pilot rating and equipment rating on DC-3, DC-4, and Convair aircraft. His total pilot time is 9,878 hours, of which 7,699 hours are on the type aircraft involved in this accident. Date of his last physical examination was November 4, 1954, and his last instrument proficiency check was May 16, 1955. He has been a captain since April 8, 1944.

First Officer C. Peter Blouin, Jr., age 30, holds a current airman certificate with ratings of commercial, instrument, multi-engine land, single-engine land and sea, and DC-3 type aircraft. He was employed by Northeast Airlines June 23, 1952, and his total pilot time with the company, all on DC-3 aircraft, is 457 hours. The date of his last physical examination was June 12, 1954.

Stewardess Sybil B. Walker, age 24, was originally employed by Northeast Airlines on July 8, 1954. After a furlough she was reemployed May 1, 1955. Miss Walker received stewardess training on original employment and a refresher course prior to reemployment.

The Aircraft

N 19942, a Douglas DC-3, serial number 4872, manufactured February 3, 1942, is owned and operated by Northeast Airlines, Inc. Total time on this aircraft is 29,712 hours. The aircraft, currently certificated by the Civil Aeronautics Administration, is powered by two Pratt and Whitney R1830-92 engines and equipped with Hamilton Standard 23E-50 propellers.